

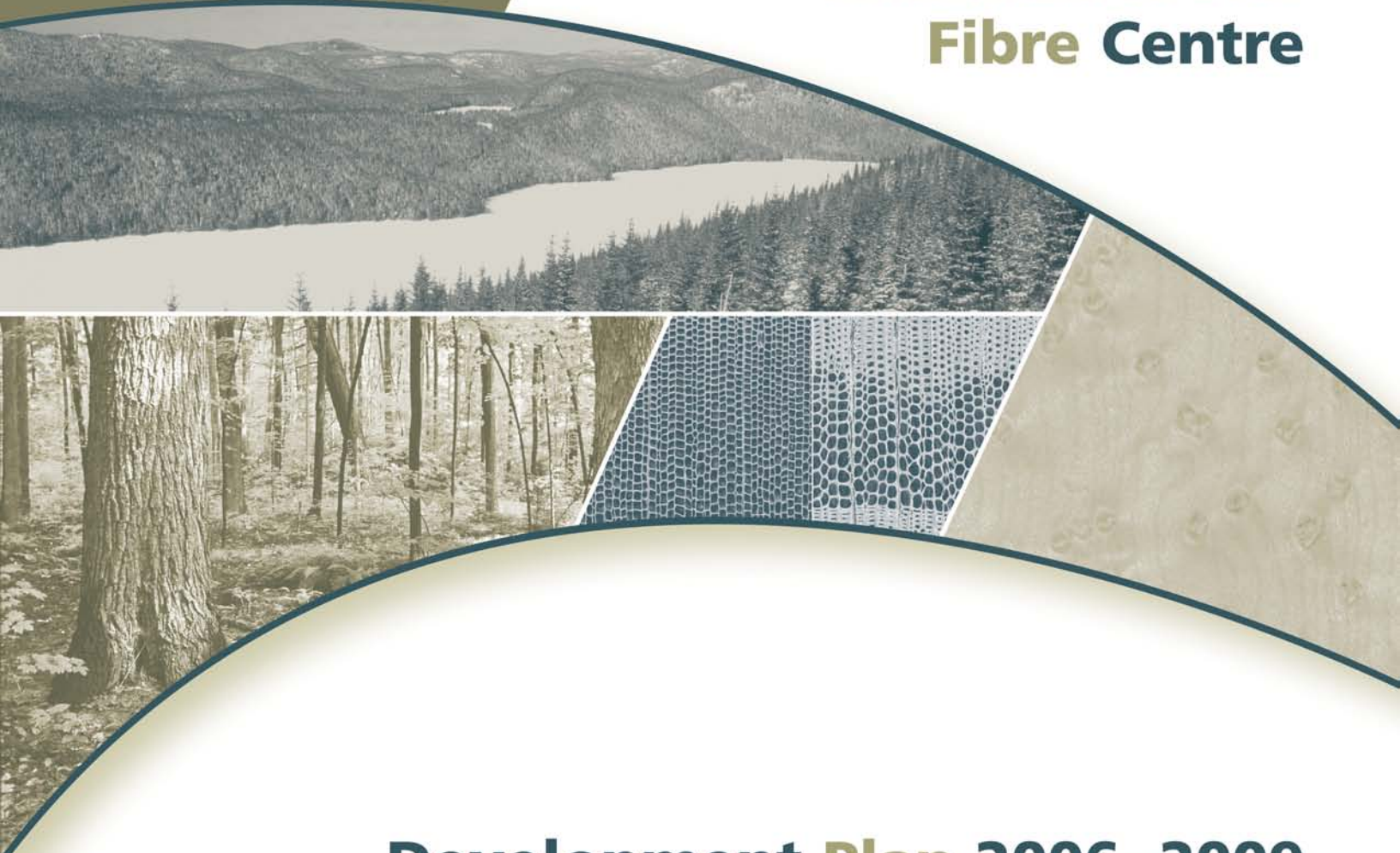


Natural Resources
Canada

Ressources naturelles
Canada



Canadian Wood Fibre Centre



Development Plan 2006–2009



The goals and objectives outlined in the Canadian Wood Fibre Centre Development Plan are supported by the Canadian Forest Service, Natural Resources Canada, and by FPInnovations.



George Bruemmer, RPF
Executive Director
Canadian Wood Fibre Centre



We support the goals and objectives of the Canadian Wood Fibre Centre as outlined in this development plan.



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Assistant Deputy Minister
Natural Resources Canada
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President and Chief Executive Officer
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June 2007



**Canadian Wood
Fibre Centre**

**Development Plan
2006–2009**

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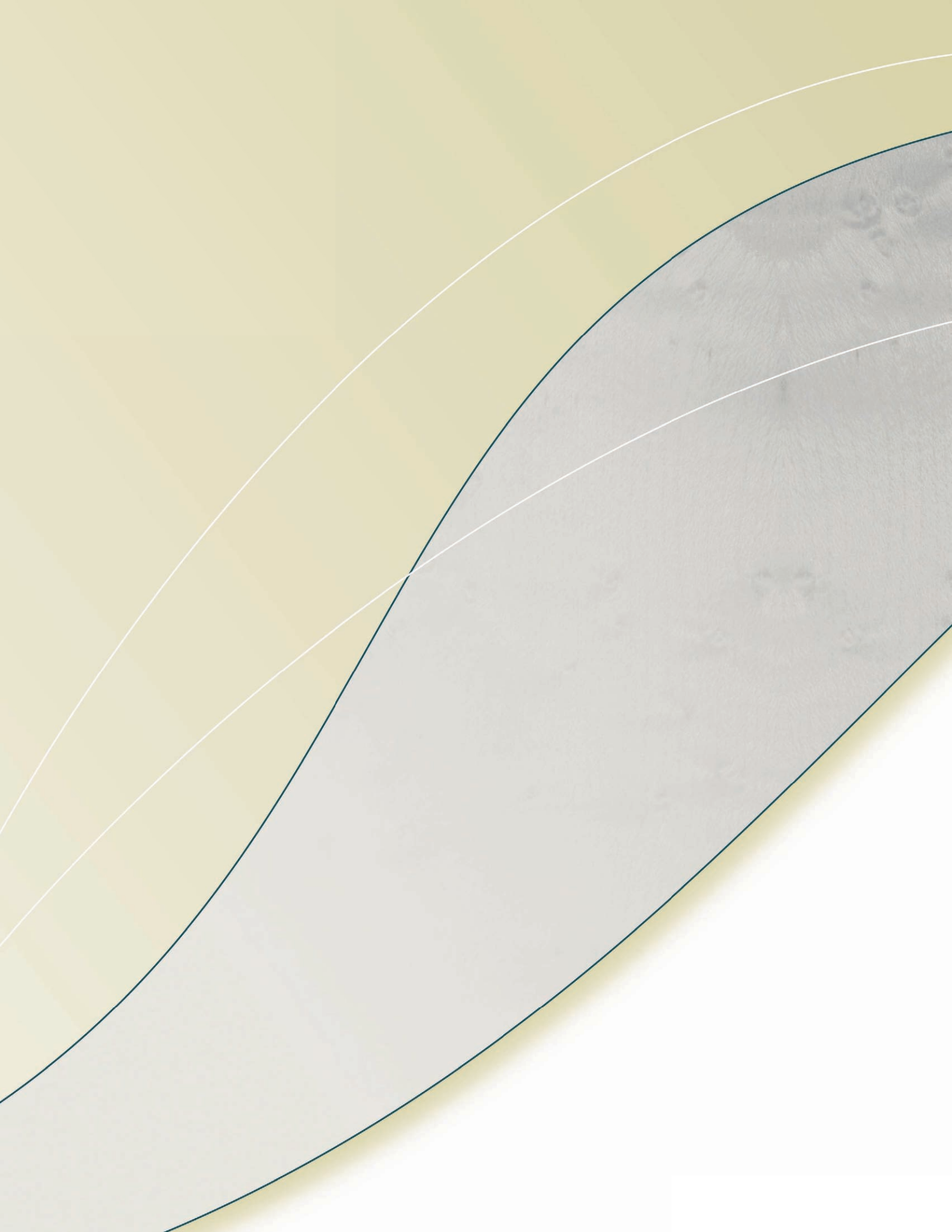
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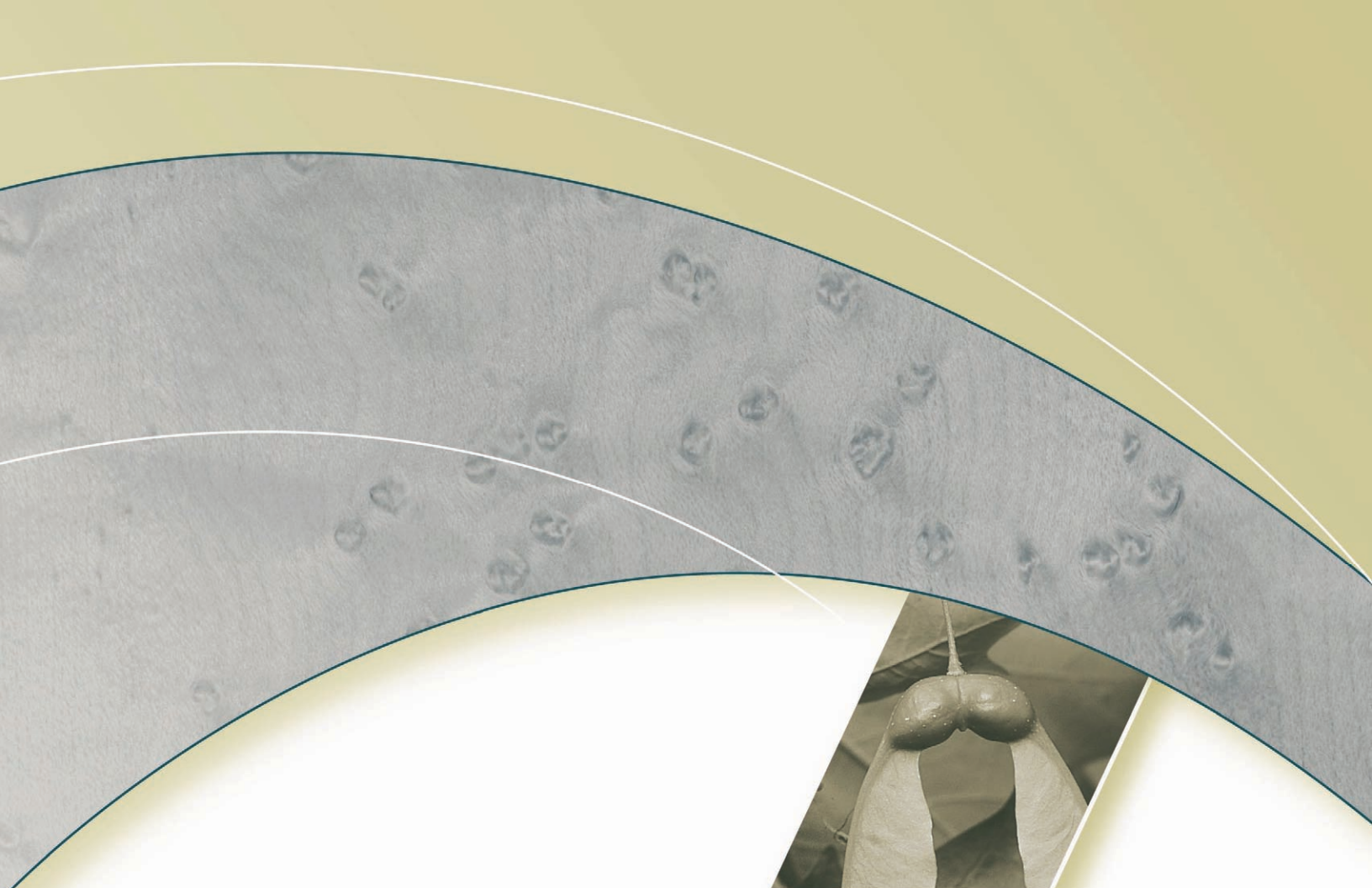
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Executive Summary

Executive Summary

The objective of this development plan, which spans three fiscal years from 2006 to 2009, is to provide a solid strategic foundation on which to build a national research program for the Canadian Wood Fibre Centre.

In 2006, the Canadian Forest Innovation Council (CFIC) issued several recommendations intended to improve the economic performance of the forest sector in Canada. Structural reforms to the Canadian innovation system are now being implemented in response to those recommendations. The most significant of these are the creation of a national fibre centre (now called the Canadian Wood Fibre Centre, or CWFC) and the consolidation of the three existing forest research institutes (FERIC, Forintek and Paprican). The institutes and the CWFC will become divisions of a new national private–public sector partnership, **FPIInnovations**.

The CWFC will contribute forest-level knowledge, tools, and expertise to the integrated research programs of **FPIInnovations**.

At the same time CFIC was doing its study, the Canadian Forest Service (CFS), a sector of Natural Resources Canada, was in the process of realigning its research planning and performance management systems to be more responsive and effective in the delivery of its strategic directions. Two of its strategic directions are to grow opportunities through research and development (R&D) that target innovation and to promote forest industry competitiveness. An integral part of the CFS response to these directions has been support of CWFC and its relationship to **FPIInnovations**.

The orientation of the research program of the CWFC will be directed by the President and Chief Executive Officer of **FPIInnovations**, with guidance from the Board of Directors. However, CFS employees at research centres across Canada will manage and deliver CWFC's research program.



Grading hardwood logs at Meakin Forest Enterprises, Sault Ste. Marie, Ontario.

CWFC's mission is to create innovative knowledge that will expand economic opportunities for the forest sector to benefit from Canadian wood fibre. As part of **FPIInnovations**, the CWFC aspires to become the following:

- the national authority on the characterization of Canadian wood fibre;
- an innovator in the development of forest-inventory technology, forest-management planning tools, and reforestation techniques;
- a knowledge leader in integrating Canadian wood fibre into a profitable forest-products value chain; and
- a key contributor to and participant in the integrated national research programs of **FPIInnovations**.

The members of **FPIInnovations** are the primary clients of the CWFC. These include government and industry policy-makers charged with the responsibility for making resource-allocation decisions; forest managers and planners requiring

better tools and information with which to improve efficiency, reduce costs, and add value to the resource; and researchers looking for new products, applications, and markets for Canadian fibre. The outputs and products of the CWFC, largely funded by public investment, will be widely shared.

The CWFC will strive for excellence, innovation, creativity, inclusiveness, and impact in its research programs and its relationships. It will aggressively identify opportunities to increase economic benefit for the sector, in the context of forest sustainability.

CWFC research programs will be nationally pertinent, with application focused at the regional level. Uptake of research products will be stimulated by engaging regional providers of technology transfer in knowledge dissemination.

Three objectives will guide CWFC activities in the short term:

- to develop a national forest-level research program;
- to promote uptake and application of CWFC knowledge products by the Canadian forest sector; and
- to implement the CWFC, and integrate it within FPIinnovations.

The successful delivery of these objectives and their supporting strategies will ensure that the CWFC structure and programs are efficient, effective, and responsive to the forest-level

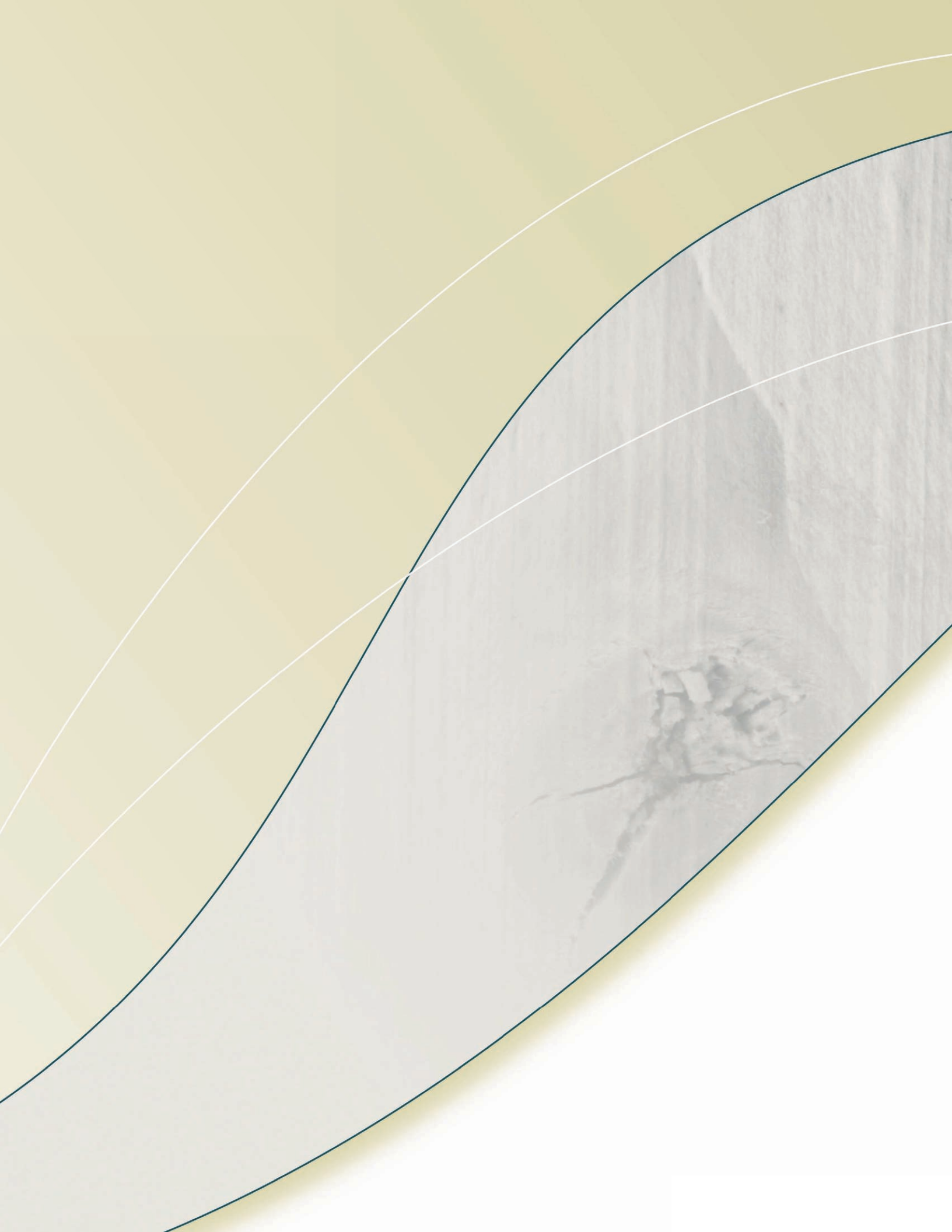


First-generation white spruce seed orchard, Baby Township, Témiscamingue area, Quebec.

innovation requirements of the Canadian forest sector over the long term.

The creation of FPIinnovations has provided an excellent opportunity to accelerate innovation in the forest sector at a time when positive change is urgently needed. The CWFC, as the fourth division of this new organization, will contribute forest-level research to an integrated public–private sector partnership that will have enough critical mass to make a significant difference nationally.

This development plan is a “living” document, and will evolve as the strategic directions of FPIinnovations are more fully articulated.





Introduction

Purpose of the Development Plan
Context and Background

Introduction

Purpose of the Development Plan

The objectives of this plan, which spans three fiscal years from 2006 to 2009, are as follows:

- to provide a solid strategic foundation on which to build a research program for the Canadian Wood Fibre Centre (CWFC);
- to guide the structural development of the CWFC within Natural Resources Canada's Canadian Forest Service; and
- to provide short-term program direction to the CWFC until the emerging directions of **FPIInnovations**, a new public–private sector partnership, can be properly reflected in a longer-term strategic plan.

This plan, successfully implemented, will position the CWFC in 10 years to be

- the national authority on the characterization of Canadian wood fibre;
- an innovator in the development of forest-inventory technology, forest-management planning tools, and reforestation techniques;
- a knowledge leader in integrating Canadian wood fibre into a profitable forest-products value chain; and
- a key contributor to and participant in the integrated national research programs of **FPIInnovations**.

Context and Background

In 2003, the Canadian Council of Forest Ministers and the Forest Products Association of Canada created the Canadian Forest Innovation Council (CFIC), a small group of senior members of government and industry with a mandate to

- develop a national innovation vision for the forest sector;

- mobilize and align capacities and resources to deliver research; and
- increase the level of investment in forest sector innovation.

Structural reforms to the Canadian innovation system are now being implemented in response to the recommendations of CFIC. The most significant of these are the creation of the Canadian Wood Fibre Centre (CWFC) and its amalgamation, along with the three existing forest research institutes (FERIC, Forintek, and Paprican), into a new national private–public sector partnership, **FPIInnovations**. The resulting four divisions of **FPIInnovations** will combine their resources to deliver a powerful world-class program that integrates a wide-ranging array of forest research endeavours—from the genomics of wood formation to the development of diverse new processes, products, and markets for Canadian fibre (Figure 1).

FPIInnovations will direct its considerable resources to supporting the profitable end-use of wood fibre by the forest sector in Canada. Its strategic objectives are to develop new value streams, to ensure operational excellence in delivering new and existing products, and to optimally utilize available Canadian wood supply. The solutions generated by **FPIInnovations** will promote the full integration of the forest value chain and the diversification of products made from the forest resource. Its integrated structure will encourage interaction and collaboration among researchers and between disciplines.

At the same time CFIC was doing its study, the Canadian Forest Service (CFS), a sector of Natural Resources Canada, was in the process of realigning its research planning and performance management systems to be more responsive and effective in the delivery of its strategic directions: to promote forest sector competitiveness, ensure forest sustainability, pursue a sustainable future for rural Canada, grow opportunities through research

and development (R&D) that targets innovation, and expand Canada's international influence. CFS support for the CWFC and for CWFC's relationship to FPInnovations is integral to growing opportunities through R&D and innovation and strengthening Canada's competitive edge.

The relationship of the CWFC to FPInnovations is unique and innovative. The CWFC is managed and staffed by CFS employees, who are housed in CFS research centres across Canada. However, its research direction and orientation are provided

by the President and Chief Executive Officer of FPInnovations. The CWFC is in effect a manifestation of CFS's tangible support for the coordinated innovation effort recommended by CFIC.

The CWFC, officially launched on 3 April 2006, will be guided by the strategic directions of FPInnovations. It will contribute forest-level knowledge, tools, and expertise to the integrated research programs of FPInnovations, which in turn support the broader forest sector objective of improved global competitiveness.

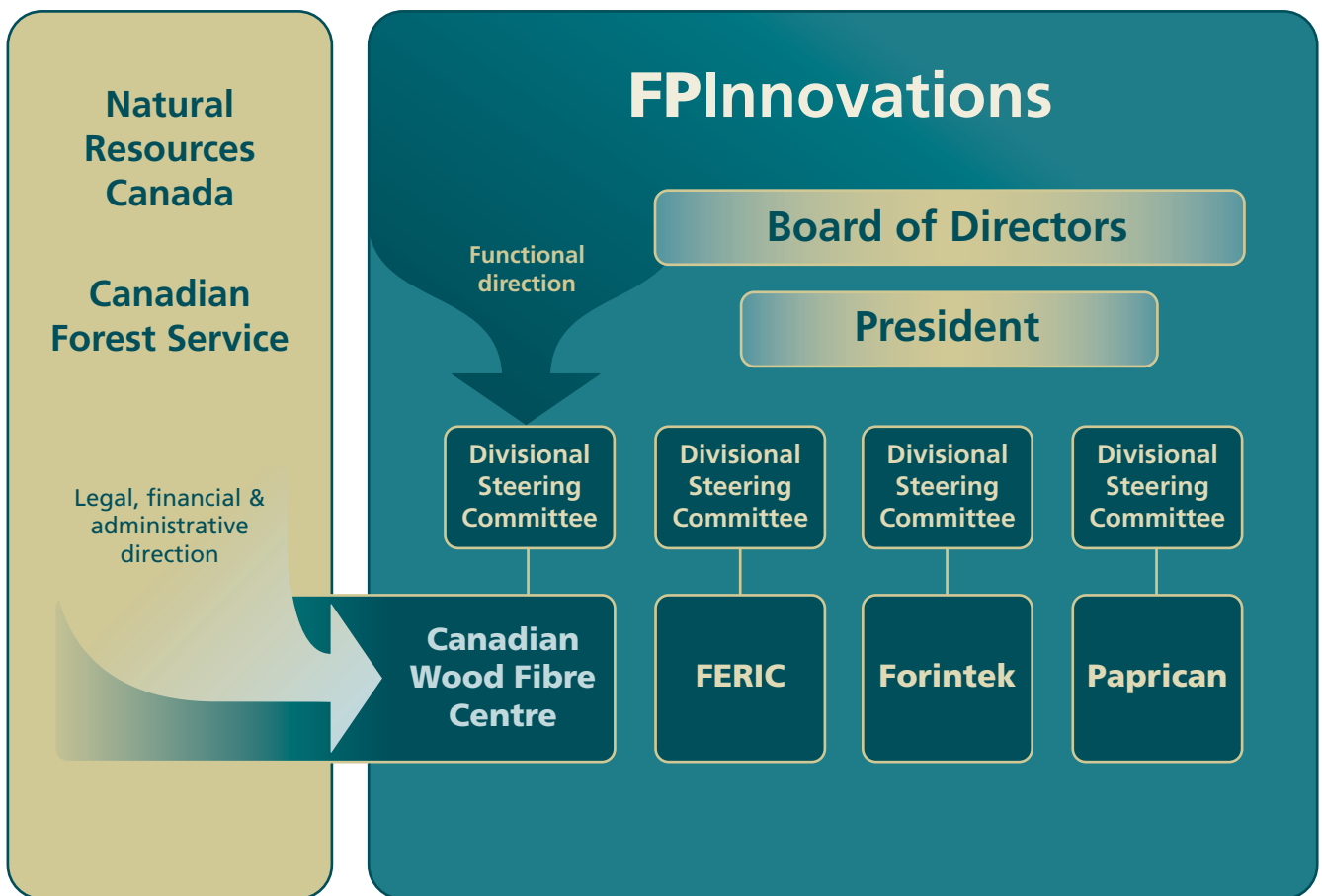
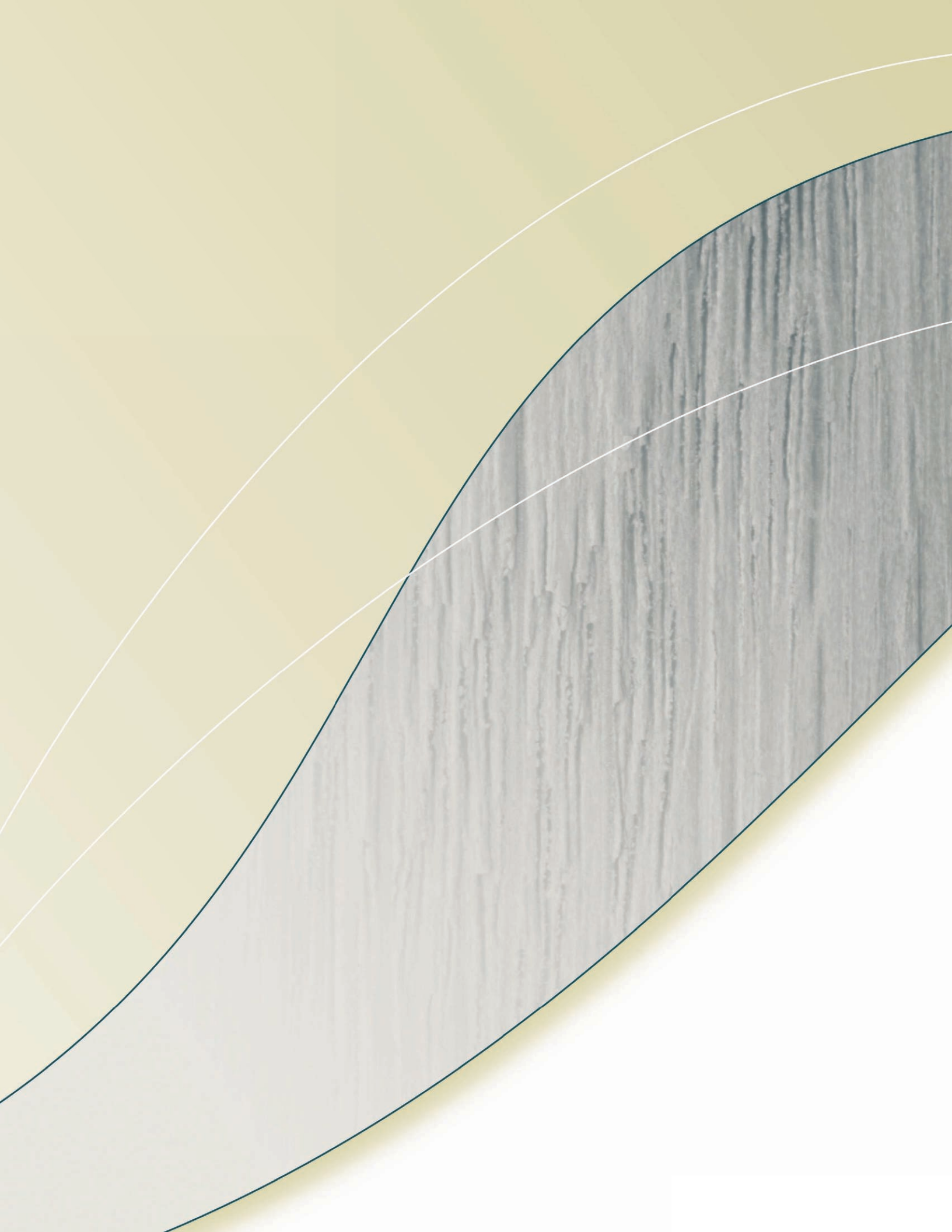
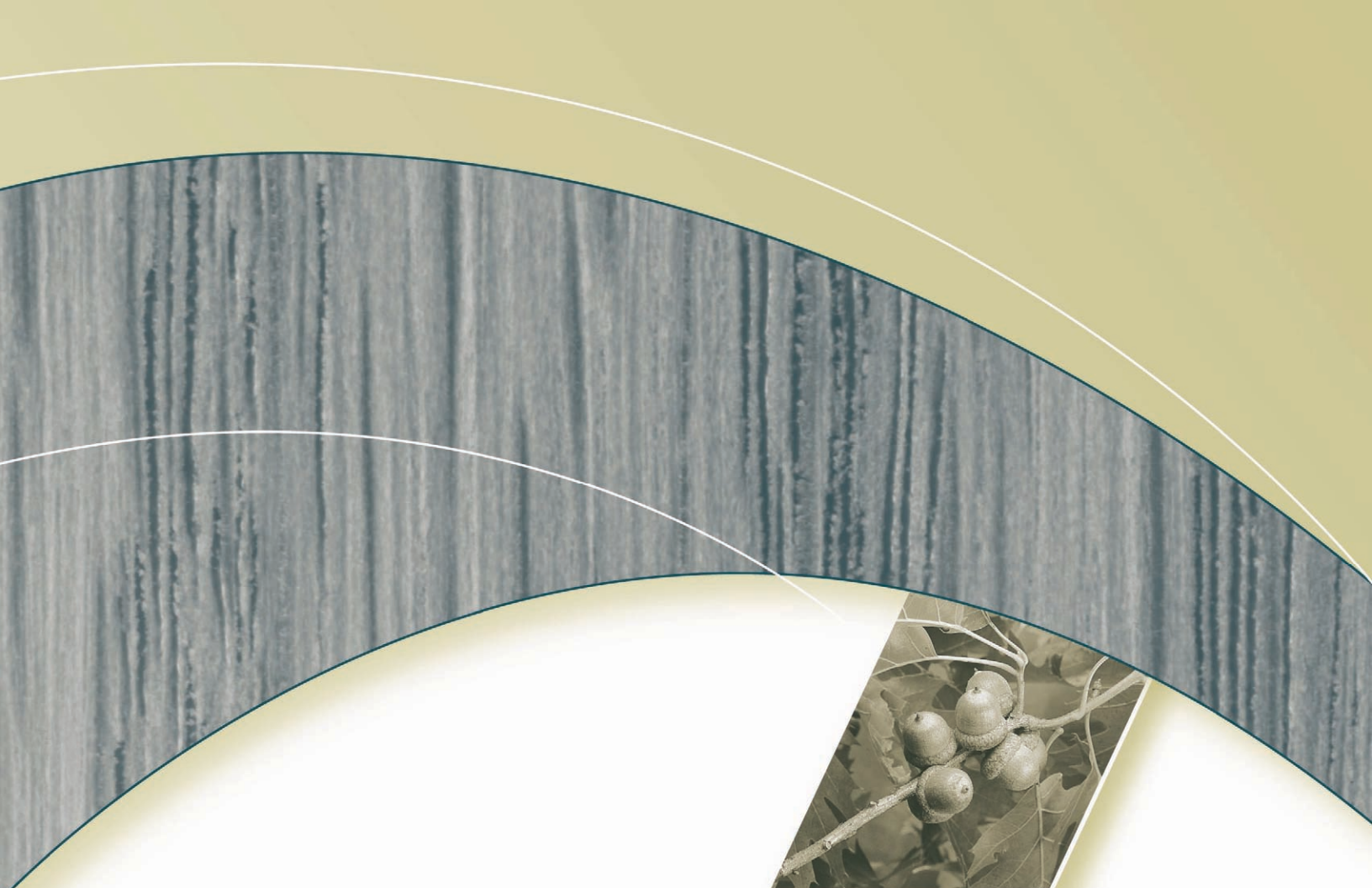


Figure 1. FPInnovations Organizational Structure





Guiding Principles of the Canadian Wood Fibre Centre

Vision
Mission
Core Values
Scope

Guiding Principles

Vision

Canada's wood fibre is sustainably managed to give the forest sector a strong competitive advantage in a global marketplace.

Mission

The Canadian Wood Fibre Centre will create innovative knowledge to expand the economic opportunities for the forest sector to benefit from Canadian wood fibre.

Core Values

A number of values will influence all CWFC programs and activities and form the foundation for the culture of the organization as it develops. They are as follows:

- Forest sustainability can be described as the optimization of multiple values over long periods of time and at large spatial scales. The CWFC will aggressively seek opportunities to increase economic benefits in both the short and long term while also promoting forest sustainability.
- The value of the CWFC will be measured as much by the relationships it fosters as by the research solutions it generates. It will strive for excellence, innovation, creativity, inclusiveness, and impact in both.
- Ecological and economic systems are complex and dynamic. To be effective in influencing decisions that affect Canada's environment and economic well-being, the CWFC will seek to understand the uncertainty inherent in making predictions in these areas, to evaluate the attendant risks involved in decisions made, and to develop a diversity of approaches.
- The CWFC will develop strong linkages to other research providers so that its response to clients' needs is comprehensive.



Shelterwood cutting in a black spruce forest in the Saguenay Region, Quebec.

Scope

The CWFC will be directed by the structures and strategic directions of its two parent organizations, NRCan's CFS and FPIInnovations. It will maintain a strong focus on its primary purpose—forest-level research to identify competitive opportunities for the forest sector—and will actively consult with the users of forest research to ensure continuing relevance. It will develop its own programs to align closely with those of the other divisions of FPIInnovations and will collaborate with outside research agencies to leverage resources and deliver comprehensive research outputs.

CWFC research products (tools, techniques, and technology) will enhance knowledge of the volume, value, and distribution of wood fibre in Canada. This knowledge will, in turn, contribute directly to FPIInnovations' objective to support broadening the profitable end-use of wood fibre through product diversification and innovative processes in the value chain.

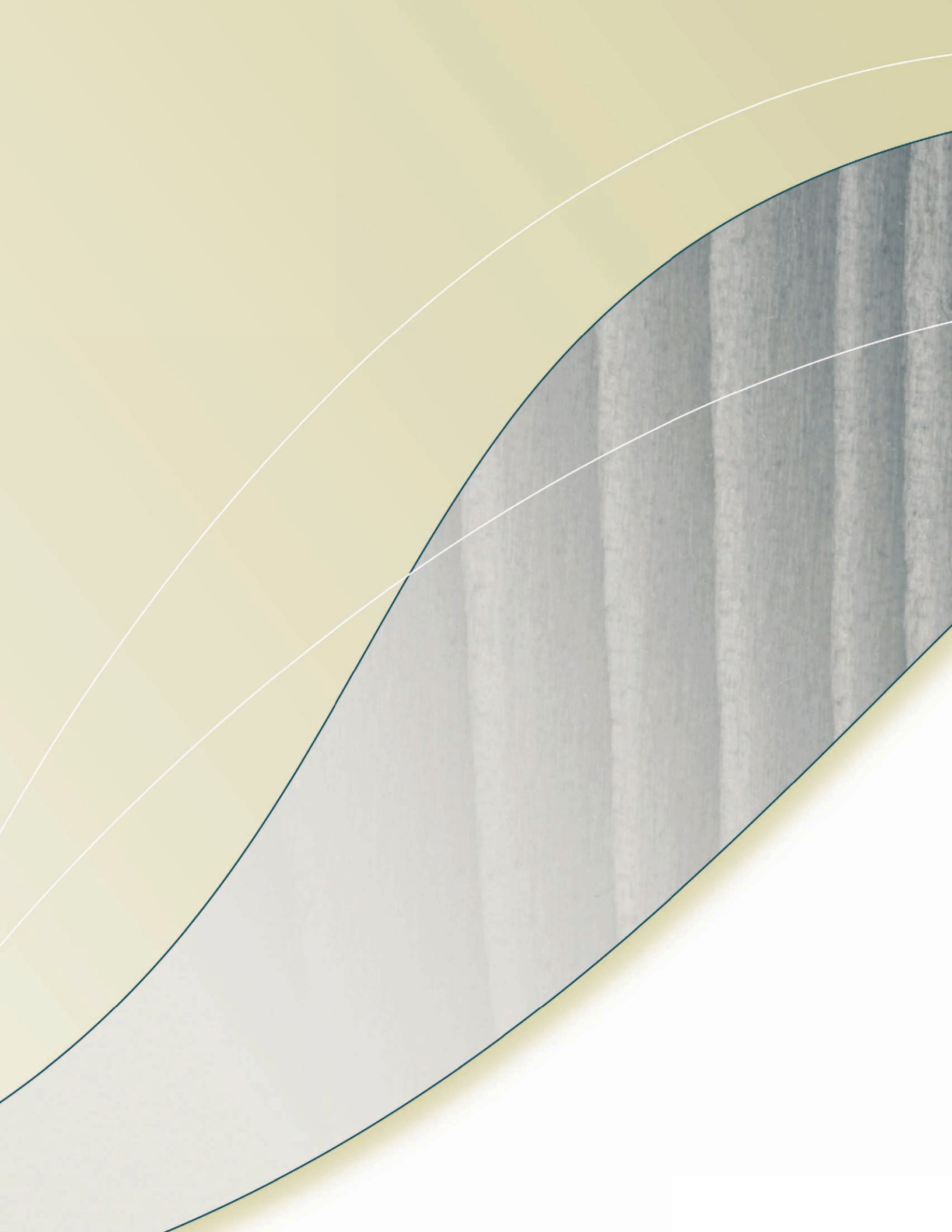
CWFC research programs will be nationally pertinent, with application focused at the regional level. Uptake of research products will be stimulated by engaging regional providers of technology transfer in knowledge dissemination.

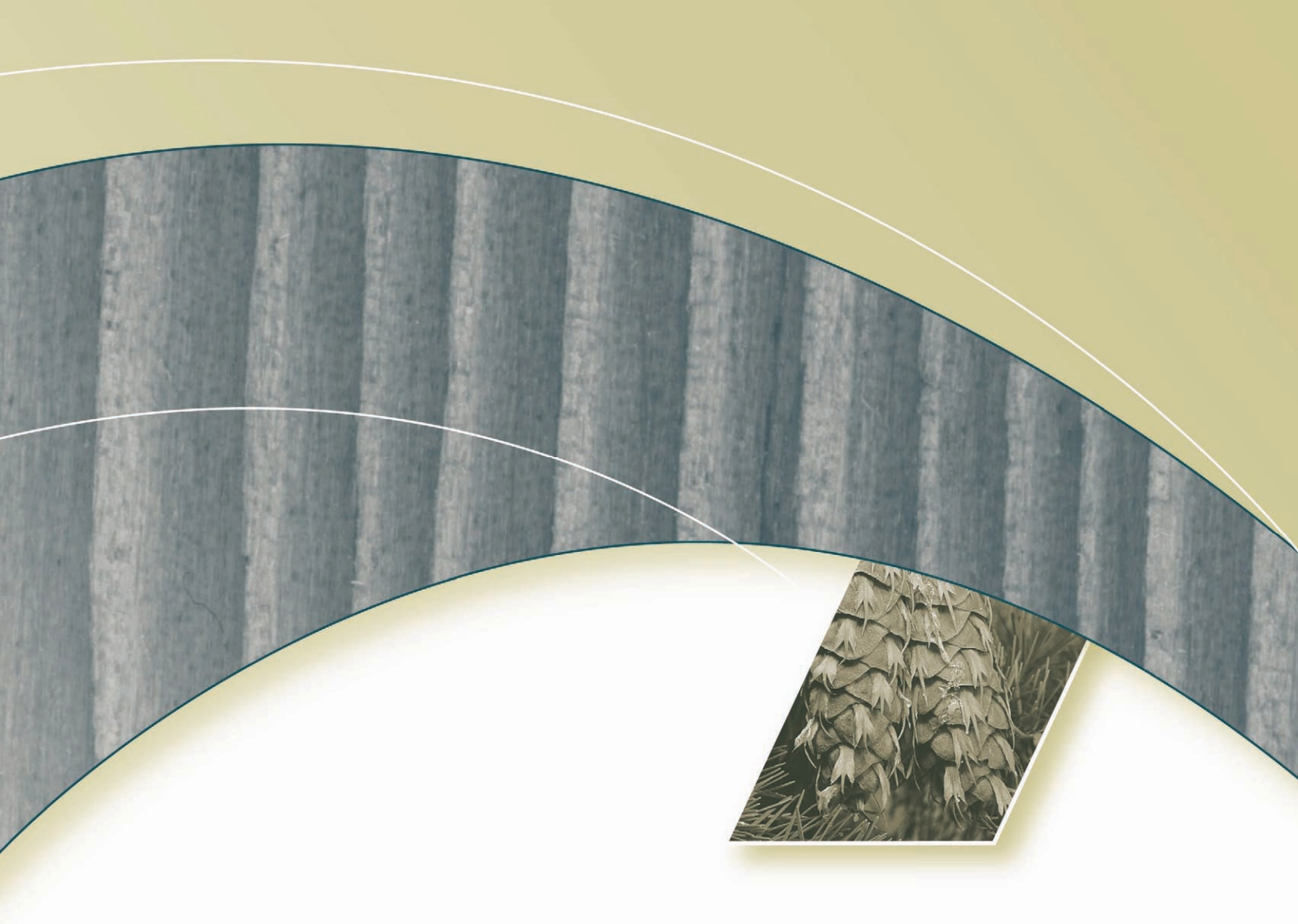
The members of **FPI**nnovations are the primary clients of the CWFC. These include the following:

- government and industry policy-makers striving to improve the financial performance of the forest sector in Canada through better resource-allocation decisions;
- forest managers requiring better resource information and tools with which to reduce costs and optimize the flow of raw material to appropriate transformation facilities;
- forest planners tasked with forecasting raw material volume and quality over long periods of time and for large areas, both for the existing and the regenerating forest;
- market researchers needing to better understand Canadian wood fibre characteristics to respond to emerging product opportunities; and
- forest product researchers looking for unique fibre attributes from which to build new products.



Forestry Research Partnership's White Pine Competition Study near North Bay, Ontario.





Objectives, Strategies, and Deliverables

- Objective 1
- Objective 2
- Objective 3

Objectives, Strategies, and Deliverables

Three main objectives, each described in detail below, form the basis for the short-term development of the CWFC (see Figure 2, p. 25):

- To develop a national forest-level research program.
- To promote uptake and application of CWFC knowledge products by the Canadian forest sector.
- To implement the CWFC and integrate it within FPIInnovations.

Objective 1: Develop a National Forest-Level Research Program

Strategies

FPIInnovations has identified value chain integration and product diversification as two key elements of a broader innovation strategy to increase the competitiveness of the Canadian forest sector. The CWFC will design its research program to provide a blend of short- and long-term products that respond to these elements. The longer-term “invention and discovery” programs (5–10 years) will create knowledge and technology that will help focus forest management planning processes on improving economic competitiveness in the forest sector. The shorter-term “applied” programs (1–5 years) will emphasize the transfer of existing and emerging research, largely in silviculture, to the forest sector and other relevant users, but with economic (value) implications attached to it.

Focus on maximizing the economic value of Canadian wood fibre

One of the main research challenges for the CWFC will be to generate fibre-attribute knowledge with the depth and detail required to inform “downstream” forest product development and diversification direction. The CWFC research program will build on the considerable work already done by the Forintek and Paprican divisions of



A fir-hemlock stand on the Montane Alternative Silviculture Systems Research Site, Vancouver Island, British Columbia.

FPIInnovations to produce comprehensive wood fibre characterization profiles. The insights gained from this information will be coupled with guidance from FPIInnovations research on current, emerging, and potential long-term market demands. Subsequent research (by the four FPIInnovations divisions) will focus on meeting those demands with the raw material, processes, and products needed to provide competitive opportunities to the forest sector.

Align regeneration research with economic value

New tools and techniques will be created and existing ones refined to ensure that genomics, genetics, biotechnology, and silviculture programs maximize the potential for economic return from forest regeneration programs. Research on how fibre-attribute quality is affected by such factors as climate, species, site, soil, water, stand dynamics, silviculture, insects, and diseases will be promoted.

Research focused on ecology is an area of strength for many CWFC researchers. Numerous projects

initiated before the CWFC was created will be continued to their planned conclusion, but with the addition of an economic overlay that may not have formed part of the original project objectives. The results from these “enhanced” projects will provide the majority of the “early wins” for the CWFC.

Improve forest management planning systems

Operational complexity at the forest level will increase significantly as the forest sector diversifies and specializes its manufactured products. Providing the appropriate raw material to a facility at the right time for a fair or affordable cost requires considerable knowledge of the fibre attributes expected and an improved capacity to plan, to optimize, and to deliver the fibre effectively.

Working closely with the FERIC division of FPInnovations, the CWFC will research improved forest inventory tools and technology to enable more sophisticated fibre-attribute supply management at the forest level. Particular emphasis will be placed on adding reliable economic (value) parameters to existing forest-inventory databases; in some cases, this will require the development of field-based technology to allow within-tree attribute differentiation. Remote-sensing technology to correlate and “scale-up” within-tree, single-tree, or plot-based value information to the forest level will also be strongly supported.

The capabilities of decision-support and wood-supply models will be refined to incorporate attribute information, volume, and value. Where appropriate, these models will be coupled with “downstream” supply models already developed by others to enable optimization of the entire forest value chain. In the short term, this will permit comparisons of value generation where competition for the same fibre exists, or conversely where new options for underutilized fibre are



Roger Gagné of the Canadian Wood Fibre Centre presents the results of experimental shelterwood cutting in a black spruce stand in the Saguenay Region, Quebec, to industrial and government partners.

being examined. Forest management planners can use these enhanced models to maximize economic return over medium- and long-term planning horizons and for large spatial scales.

Deliverables

- The establishment of a network of fibre-quality experts to guide research program linkages between wood characteristics and forest product markets (2007).
- A synthesis of existing knowledge pertinent to fibre quality and value; the identification of gaps and the articulation of research projects to respond to these gaps (2007).
- An evaluation of new technologies for measuring, modeling, and optimizing the economic value of fibre at the supply end of the value chain. An action plan to develop those with the most promise (2007–08).
- Research products and services in genetics, genomics, and silviculture that contribute to

both the economic and ecological well-being of the country. Many of these are extensions of work initiated by CFS researchers and their collaborators before the creation of the CWFC.

- A catalogue of long-term federal research sites across Canada, along with a plan to capitalize on their invaluable fibre-attribute knowledge (current and potential).
- Training for CWFC and CFS staff, offered through Forintek and Paprican, in markets and forest-product manufacturing processes.

Objective 2: Promote Uptake and Application of CWFC Knowledge Products by the Canadian Forest Sector

Strategies

Engage regional mechanisms

The CWFC will promote uptake of its products by delivering them as much as possible through regional organizations already engaged in knowledge transfer. The CWFC will also utilize the expertise, resources, and facilities of the other divisions of FPIInnovations to disseminate knowledge.

The CWFC will maintain close linkages with CFS regional offices and will utilize the networks and resources available at these locations to transfer research products to the forest sector or other potential markets.

Facilitate consultation and communication

Regional consultations

A series of regional meetings hosted by the CFS regional offices were held through the fall and winter of 2006–07 to promote the CWFC to its clients and partners. An effective dialogue is of particular importance to the CWFC in its first year as it establishes its new identity and its place in FPIInnovations.

This dialogue serves two main purposes:

- to begin marketing the CWFC to the forest sector by introducing its objectives, employees, and programs; and
- to validate the strategies proposed in this plan, refine them as needed, and identify other regional issues and priorities to which the CWFC could potentially respond.

Continuing advice from the users of CWFC outputs will be essential to maintain a relevant research program. Given the already effective consultative processes in use by the other FPIInnovations divisions and the significant overlap of audiences, the CWFC will adapt to and as much as possible piggyback on these processes to elicit input and feedback from clients.

The CWFC will depend on meaningful connections with numerous other organizations to deliver its programs, and its success will be measured to a large degree by the quality and breadth of the relationships it is able to maintain nationally and regionally.

Workshops and forums

An ongoing series of workshops will be undertaken to engage members of the science community in determining the appropriate research responses to the priorities identified by the regional consultations. These workshops will allow scientists in the CFS, the CWFC, and the other FPIInnovations divisions to interact and build relationships.

Effective dialogue within the CWFC will be essential to developing a positive and enthusiastic culture for the organization and a sense of ownership and “belonging” for its employees. The virtual nature of the CWFC adds a challenging dimension to this task, given the broad range of

skills and backgrounds not only of its employees, but also of the staff from the CFS and the other FPIInnovations divisions with whom they will be closely linked. An array of communications tools, both personal and electronic, will be applied to ensure positive and continuing interaction between all levels and locations of the organization.

Deliverables

- A member-consultation plan developed and delivered in collaboration with the other FPIInnovations divisions (2007).
- A competitive process for reviewing and approving research proposals (2007).
- A comprehensive communications plan (2007).
- A knowledge-transfer plan, developed by a network of knowledge-transfer professionals drawn from all regions of Canada (2007–08).
- Training for staff in organizational development and culture change (2007).
- An array of electronic tools to enable open communication and dialogue in a “virtual” context among CWFC staff (2007–08).

Objective 3: Implement the CWFC and Integrate It within FPIInnovations

Strategies

Implement a governance model for the CWFC, within FPIInnovations

CWFC programs and activities will be responsive to and compliant with CFS directions and policies. At the same time, the CWFC will become the fourth division of FPIInnovations, which will provide functional direction to the CWFC and ensure that CWFC activities are closely and appropriately integrated with those of the three other divisions.



Employees of the Canadian Wood Fibre Centre and representatives from FPIInnovations and its divisions, FERIC, Forintek, and Paprican, get to know each other at a workshop in Edmonton, Alberta, in March 2007.

The operations of the CWFC will be managed by a small team of CFS managers distributed across Canada. This team will be supported by the management teams of each of the CFS regional offices in Victoria, Edmonton, Sault Ste. Marie, Québec, Fredericton, and Corner Brook as well as by those of the FPIInnovations divisions in Vancouver, Montréal, and Québec.

A CWFC Divisional Steering Committee will be created in 2007 to oversee the centre's operations. Although it will function like the steering committees developed for the other FPIInnovations divisions, it will also recognize and respect the CWFC's unique legal, administrative, and human resource management obligations to the CFS.

Engage the provinces and the forest industry in the development of the CWFC

The preliminary development work for the CWFC was completed in 2005 by a task force composed of members from the CFS, Forintek,

FERIC, Paprican, and the provinces, with input from industry stakeholders. With the official launch of the CWFC in April 2006, this group was renamed the “Design Team,” and its membership was expanded to include industry and academic representatives from across Canada. This development plan is the result of a collaborative effort by the Design Team.

The provinces and industry are represented on the FPIInnovations Board of Directors and will thus strongly influence the orientation of CWFC programs. Additional representation and supervision will be provided through the CWFC Divisional Steering Committee.

Existing relationships between CFS centres and the provinces or between the provinces and industry will be used to promote CWFC–provincial interactions, adding a valuable dimension to CWFC activities.

Leverage resources through relationships

Staff from CFS centres across Canada will be deployed to the CWFC over the three-year term of this plan, providing the core knowledge, skills, and culture for the new organization. They will work in close collaboration with their counterparts in the CFS and FPIInnovations to deliver research

outputs that are pertinent, timely, and comprehensive to forest sector stakeholders.

Key relationships with industry, the provinces, and academia will be developed in all regions of Canada. These relationships will add intellectual breadth and depth to the CWFC research program, promote regional relevance, and encourage the application of outputs in the forest sector.

Deliverables

- The CWFC established as a “virtual” research centre within the CFS and operating as the fourth division of FPIInnovations (2007).
- A management structure and team in place (2007).
- An approved development plan (this document) guiding the development of the CWFC for the short term (2007).
- A functioning multidisciplinary, cross-representational Steering Committee (2007).
- CWFC staffing levels and skills reflective of the strategic direction and mandate of the CWFC (2007–08).
- Key relationships, both formal and informal, initiated in all regions of Canada (2007).

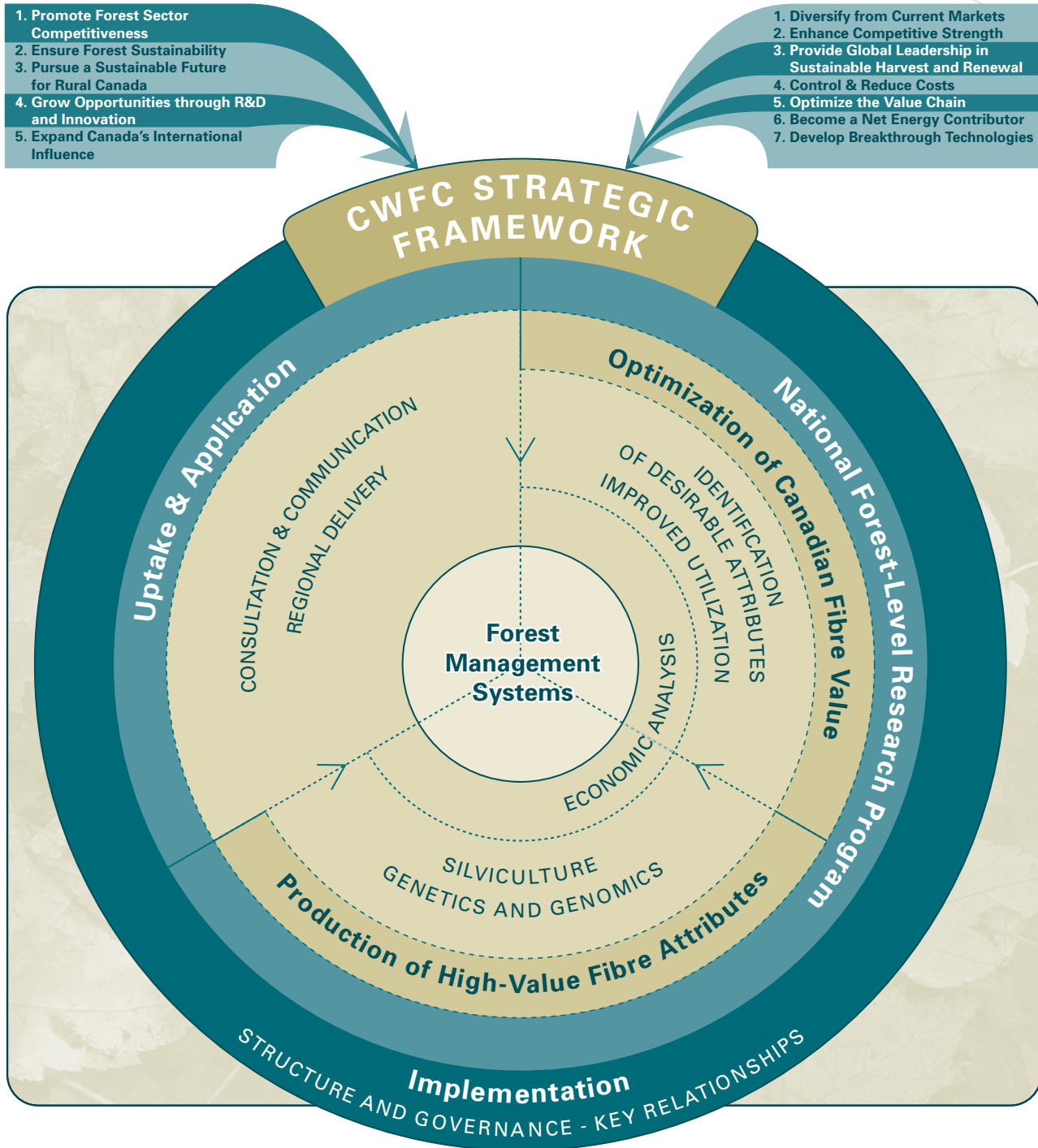
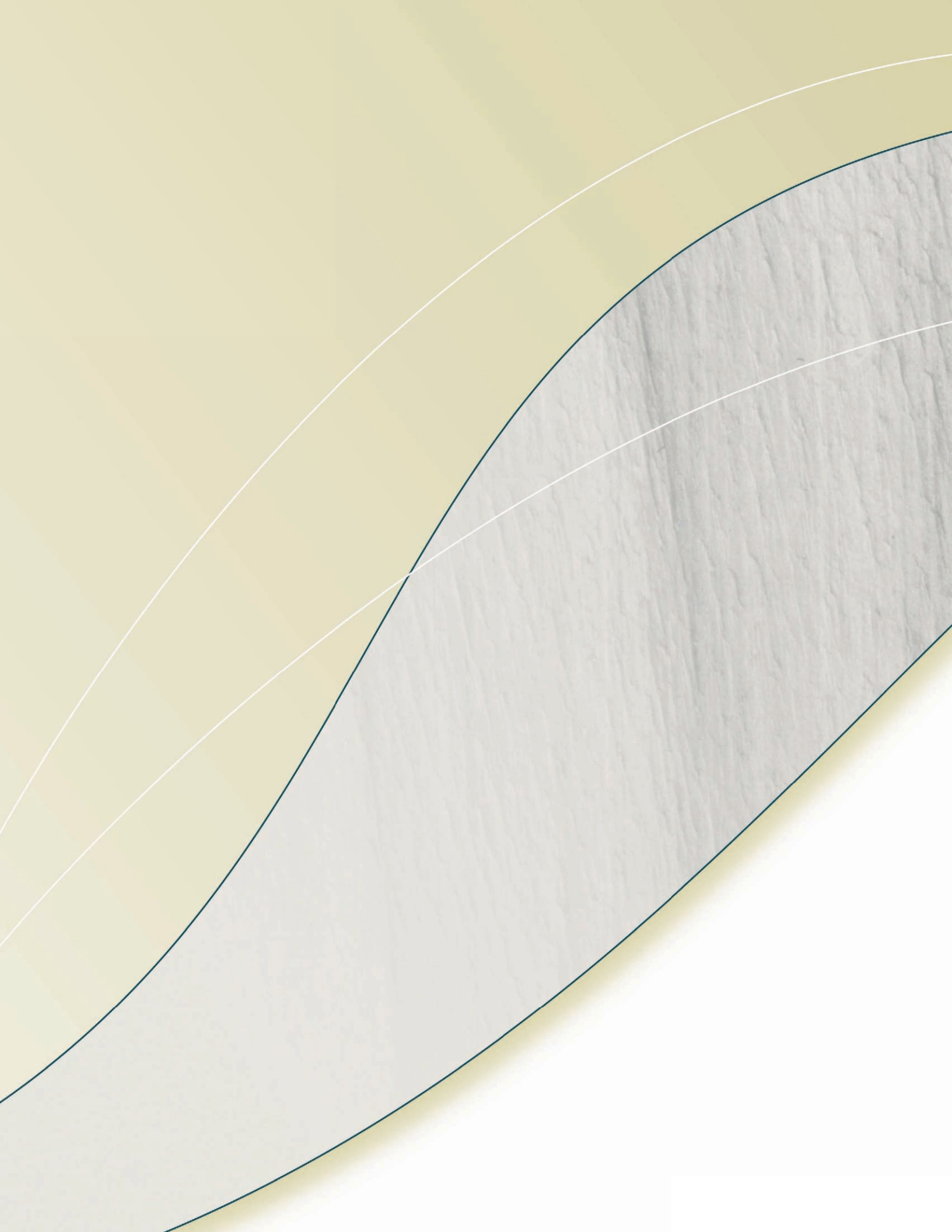
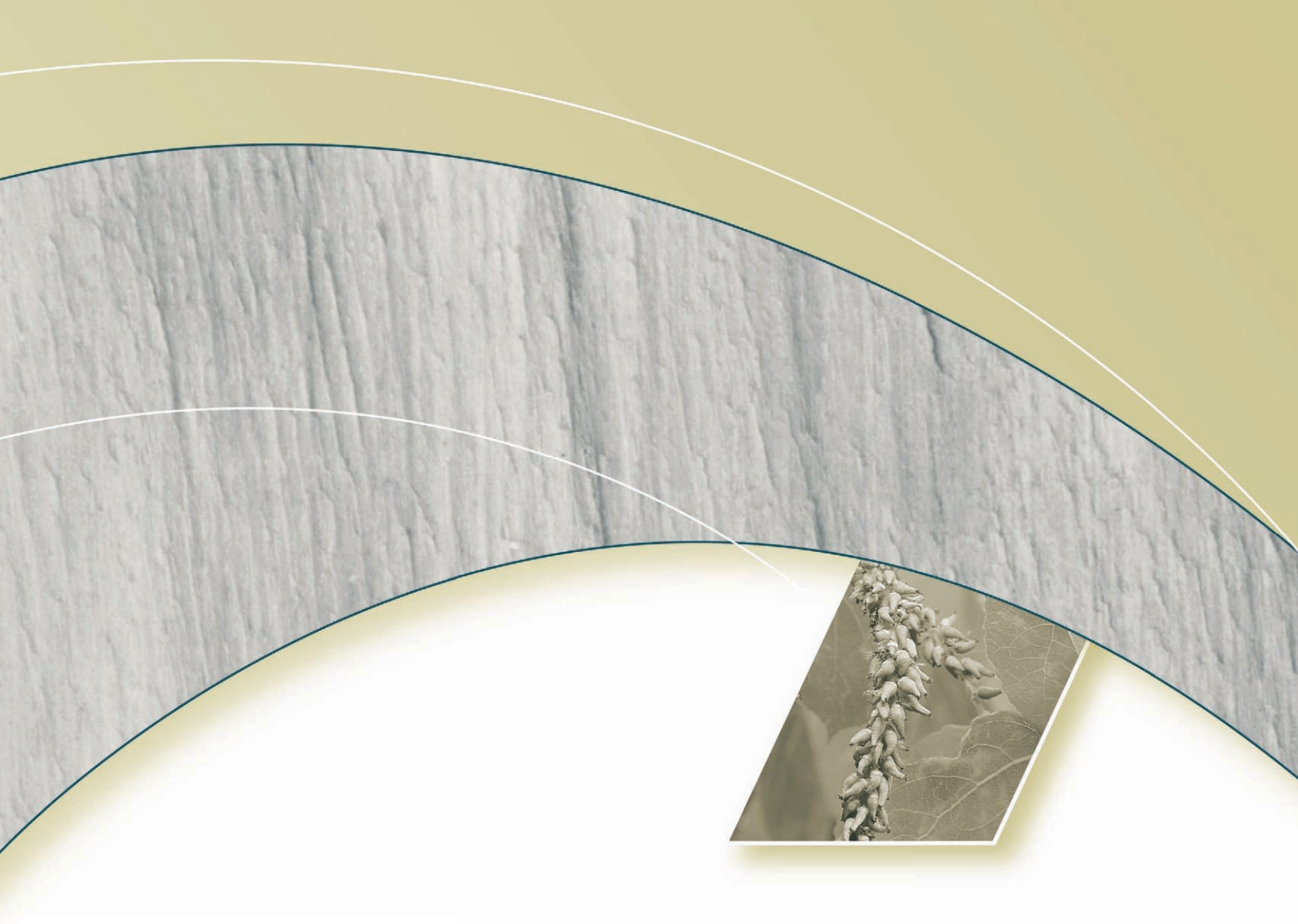


Figure 2. Canadian Wood Fibre Centre (CWFC) strategic framework.





Conclusion

Conclusion

The creation of **FPI**nnovations has provided an excellent opportunity to accelerate innovation in the forest sector at a time when positive change is urgently needed. The CWFC, as the fourth division of this new organization, will contribute forest-level research through an integrated public–private sector partnership with enough critical mass to make a significant difference nationally.

The focus on economic value is a departure from the norm for forest-level research and is

a new niche within which the CWFC can add incremental value to forest research in Canada. Time, collaboration, and persistent effort will be required to create this niche successfully.

This development plan will guide CWFC activities for up to three years. A comprehensive longer-term plan will emerge during that time as research gaps, client needs, and the structure and function of **FPI**nnovations become clearer.

Photograph Credits

Cover: Boreal forest, Forests of Canada Photographic Collection, Canadian Forest Service, Natural Resources Canada (CFS, NRCan) (*top*); Acadian forest, Forests of Canada Photographic Collection, CFS, NRCan (*left*); confocal transverse optical sections of spruce and Douglas-fir, FPInnovations, Paprican (*middle*); sugar maple veneer, courtesy A&M Wood Specialty, Cambridge, ON (*right*).

Page 1: Montane Alternative Silviculture Systems Research Site, Vancouver Island, BC. Photo by Bill Beese, Western Forest Products, Duncan, BC.

Page 5: Sorted cedar logs. Photo by Art Groot, Canadian Wood Fibre Centre (CWFC), CFS, NRCan.

Pages 6 & 7: Sugar maple veneer, courtesy of A&M Wood Specialty, Cambridge, ON; sugar maple keys, from *Trees in Canada*, NRCan, 1995.

Page 8: Photo by Art Groot, CWFC, CFS, NRCan.

Page 9: Photo by Jean Beaulieu, CWFC, CFS, NRCan.

Pages 10 & 11: Black spruce wood, NRCan, CFS; black spruce seed cones, from *Trees in Canada*, NRCan, 1995.

Pages 14 & 15: Red oak wood, NRCan, CFS; red oak acorns, from *Trees in Canada*, NRCan, 1995.

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Page 30: Photo by Myrna Parker, Communications, NRCan.

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